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February 21, 1996

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Federal Communications Commission
Office of Secretary

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

Re: *Ex Parte* Presentations in ET Dockets Nos. 96-8 (Spread Spectrum)

Dear Mr. Caton:

Late yesterday afternoon, I discussed Cylink's positions in ET Docket No. 96-8 with Suzanne Toller, Legal Advisor to Commissioner Chong. Copies of the materials distributed at the meeting are attached.

An original and one copy of this notice are provided. Please contact me with any questions involving this matter.

Respectfully,

David E. Hilliard

David E. Hilliard
Counsel for Cylink Corporation

cc: Suzanne Toller, Esq. (w/ encl.)

No. of Copies rec'd 0+1
List ABCDE

Cylink Corporation

Sunnyvale, California

ET Docket No. 96-8

- **Applications That Need Power Above 6 dBw (4 Watts EIRP)**
  - **Intelligent Transportation Systems (e.g Traffic Light Control, Traffic Sensors, and Toll Collection Back-Haul)**
  - **Internet Connectivity for Schools**
  - **Energy Control**
  - **Telemedicine**
  - **Cellular and PCS Backbone**
  - **Thin Route T-1**
  - **Rural Telcos**
  - **Emergency Restoration**

- **Needs and Applications Can Be Temporary or Long Term. Part 15 Spread Spectrum Point-to-Point Links Can Fill the Gap on Short Notice.**

Ex Parte Presentation
February 20, 1997

Technical Considerations

- **4 Watts EIRP at 2.4 GHz Can Support 5 Mile Links vs. 30 Mile Links Now Usable.**

- **4 Watts EIRP at 5.8 GHz Can Support 7.5 Mile Links vs. 24 Mile Links Now Usable.**

- **Lower Power Means More Sites; Greater Expense, and Greater Environmental Impact.**

- **Higher Power is Needed to Overcome Growing ISM Noise Levels, Particularly at 2.4 Ghz.**
  As NTIA has pointed out: "... the dominant [microwave] oven signals can be 30 dB or more stronger than the background aggregate signal level. ***For this reason it is important that designers of equipment to be used in the 2400 - 2500 MHZ band consider the effects imposed by those dominant oven sources, especially if the equipment is to be used in a downtown location."*** Measurements to Characterize Aggregate Signal Emissions in the 2400 - 2500 MHZ Frequency Range, NTIA Report 95-323 (Aug. 1995) (Emphasis supplied) at 22. **CCIR Studies show measured field strength for ISM devices in the 2450 MHZ band ranging from 60 to 120 dBuV/m at 30 meters from the boundaries of buildings in which the ISM equipment is located.** Recommendations of Task Group1/2 (formerly CCIR IWP 1/4), CCIR Document 1 65 E (14 Dec. 1993) at Table 1.

- **Point-to-Point Non-Consumer Links Have Operated for Nearly 6 Years Without Interference. Some 3000 Cylink transmitters in the U.S. operate in systems with more than 4 watts EIRP without harmful interference.**

- **LANS Are More Likely to Desense Point-to-Point Systems Than Vice Versa.**

Economic Considerations

- **The current waivers to permit antenna gain greater than 6 dB provide not only jobs and technology in the U.S., but support a thriving export business. Cylink systems are also used in 80 countries throughout the world. Foreign policy makers look to the U.S. A change in U.S. policy may affect use in other countries.**

Ex Parte Presentation
February 20, 1997

Transition Provisions

- **Transition Provisions Should Foster Flexibility and Accommodate Ongoing Projects.**

  Any restrictive requirements that would reduce EIRP from that now permitted under existing waivers should be implemented over at least a 12 month period after new rules are published in the *Federal Register.*

Ex Parte Presentation
February 20, 1997

Global Wireless Connectivity

Extending Network Access For Voice and Data

CYLINK

Wireless Communications Group

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Providing the Connection: AirLink

Wireless Data Networks

AirLink systems provide remote connectivity in a wide range of private and public data networks. Systems can be deployed in hub, repeater and endpoint configurations to implement point-to-point or multipoint data networks. Banking networks use AirLink to connect ATM terminals. Point-of-sale and gaming networks consolidate traffic from multiple terminals and use AirLink for transmission to off-site transaction processing centers. Internet service providers are using the wide range of AirLink products to supply connectivity worldwide. AirLink systems enable corporations to build private wireless networks that span anything from parking lots to entire countries. By using digital technologies, these networks can transport data or voice traffic with equal efficiency.

Country-Wide Network Reaches Growers

A large international fruit company recently set up a nationwide network to support farming operations in Latin America. Public carrier circuits were employed as the backbone, but connecting the carrier's points of presence to plantation sites required wireless communications. The company built an entire coast-to-coast corporate data network operating at 64 kbit/s using AirLink systems and Cisco routers. The wireless network pushes just-in-time ordering principles to growers by allowing inventory to be picked as orders are received, barcoded and tracked en route to the customer.

Wireless Replaces Noisy Wiring

Faced with a noisy wiring plant that handles voice but not data, the Costa Rica telephone company established a hilltop hub site with line-of-sight access to businesses in the capital city of San Jose. All of the traffic coming into the site across low-speed links is multiplexed into a single fractional T1 circuit and backhauled over a larger AirLink circuit to the central office. This allows the telephone company to immediately provision valuable customers while the effort to upgrade cable continues at a normal pace.

inkTM in Voice Communications

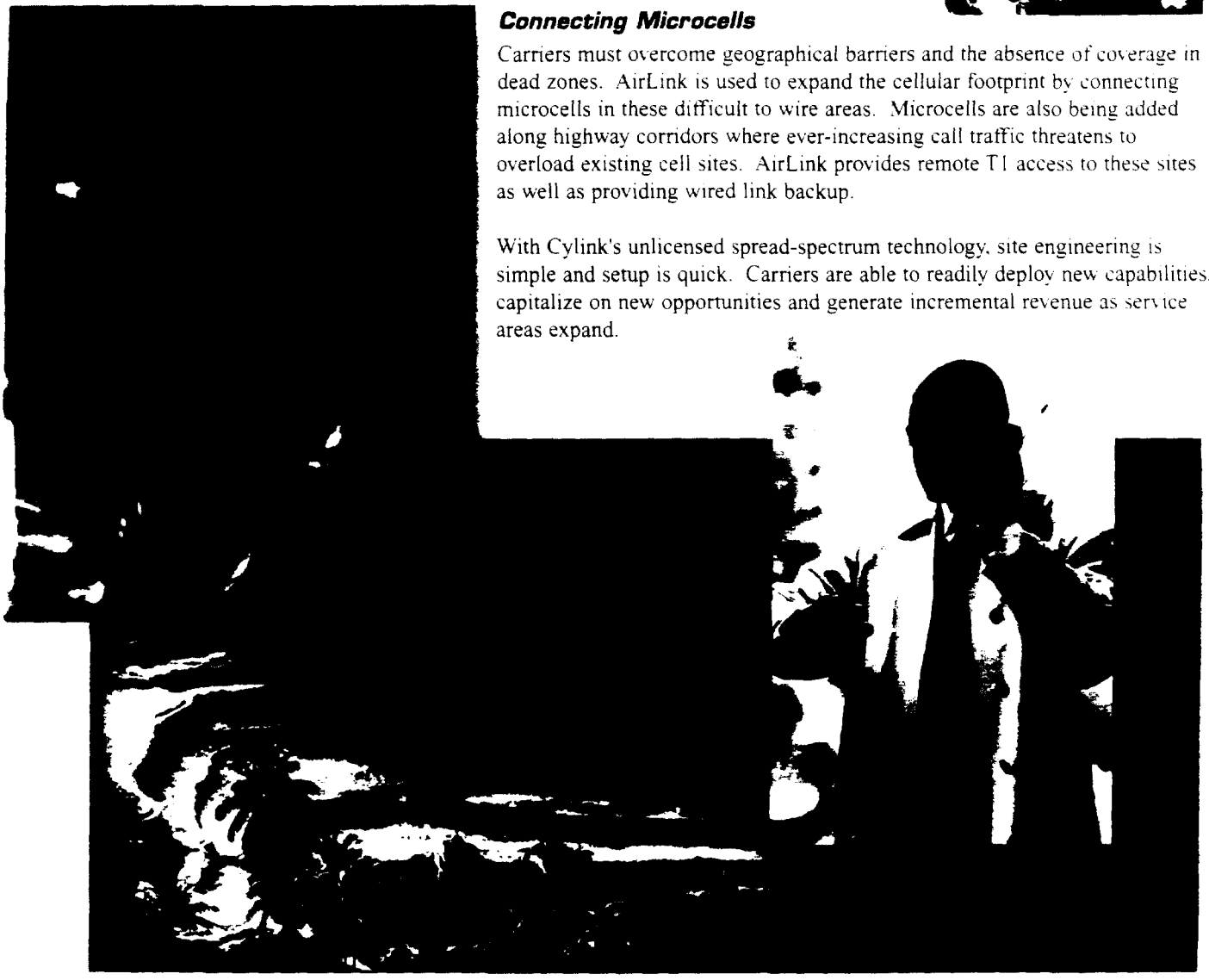
Providing Cell Interconnect For PCS

The rapid expansion of PCS (Personal Communication Services) requires construction of thousands of new microcells. The placement of cells is dictated by the area that must be covered, not by the convenience of routing backhaul connections to the site. Because of this, cells have been located on top of power poles, bridges, and other prominent structures. Network builders need to connect these cells to the service provider's point of presence, but many cells are difficult to reach by wire. To offer immediate access, a major PCS supplier in the US selected the AirLink T1. With the delivery of T1 over microwave, AirLink allows connectivity in out-of-the-way locations providing for rapid and cost effective infrastructure expansion.

Connecting Microcells

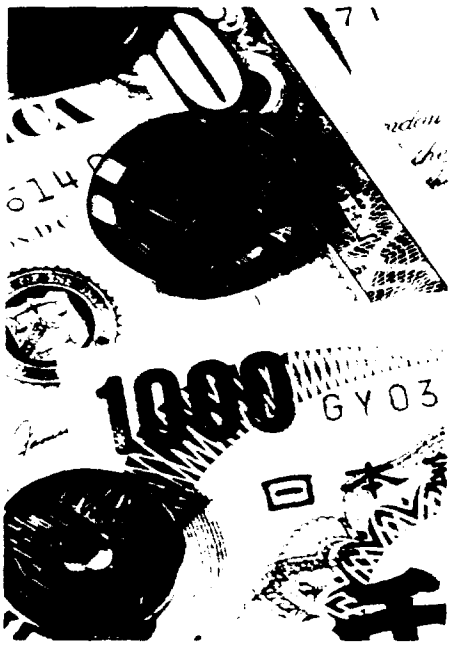
Carriers must overcome geographical barriers and the absence of coverage in dead zones. AirLink is used to expand the cellular footprint by connecting microcells in these difficult to wire areas. Microcells are also being added along highway corridors where ever-increasing call traffic threatens to overload existing cell sites. AirLink provides remote T1 access to these sites as well as providing wired link backup.

With Cylink's unlicensed spread-spectrum technology, site engineering is simple and setup is quick. Carriers are able to readily deploy new capabilities, capitalize on new opportunities and generate incremental revenue as service areas expand.



Providing the Connection... Al

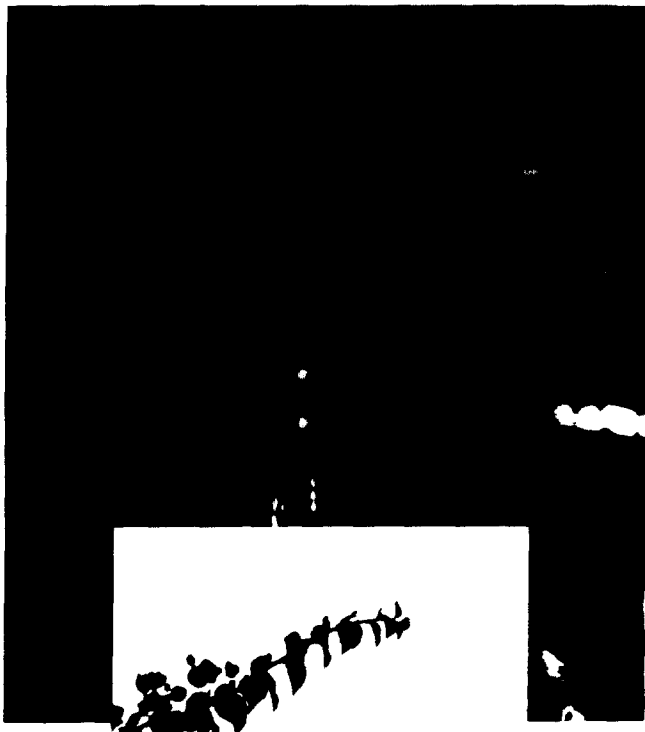
Expanding the Communications Infrastructure



Cylink is helping carriers realize the goal of allowing people to communicate with one another, anytime, anywhere.

Potential telephone customers in many rural areas remain unserved by wire due to capital costs, time to deploy, or physical barriers. Radio-based infrastructures significantly reduce or eliminate such drawbacks. These networks cost far less to install than physical connections and readily circumvent most obstacles while providing more rapid expansion of services. When AirLink systems are deployed for temporary use in the local loop, they can be moved and redeployed to new locations as the copper infrastructure catches up.

AirLink provides facilities for the delivery of telephony in combination with traditional voice equipment such as channel banks, key systems and PBXs. Cylink's wide range of AirLink microwave systems allow scalability from a single line to E1 capacity.



Whether builiding a private data network, or extending phone service to a remote village, AirLink systems allow network operators to quickly provide service to locations that would otherwise be inaccessible.

WLL (Wireless Local Loop) Connects Remote Villages

The Pakistan Telecom Corporation has a mandate to install thousands of telephone lines to remote villages that have never had service. In order to meet time and quality-of-service provisions in the mandate, they chose AirLink as part of their pay phone system design. AirLink systems can be deployed rapidly to temporarily connect phone sites and then redeployed to more distant locations as the wired network expands to absorb the previous site.

Reaching Business When Limited Wiring Can't

As part of a program to upgrade their infrastructure, the Jamaica Telephone Company recently purchased a modern fiber backbone, a new central office and a state-of-the-art switch. Yet with a limited wiring plant, businesses still experienced difficulty accessing voice services. The solution involved 64 kbit/s AirLink wireless links - each delivering 8 channels of compressed 8 Kbit/s voice - between the remote customers and the central office. The AirLink systems allow Jamaica telephone to reach beyond existing wiring to provide service to new customers.

AirLink™ in Data Communications

Delivering E-mail via the Internet

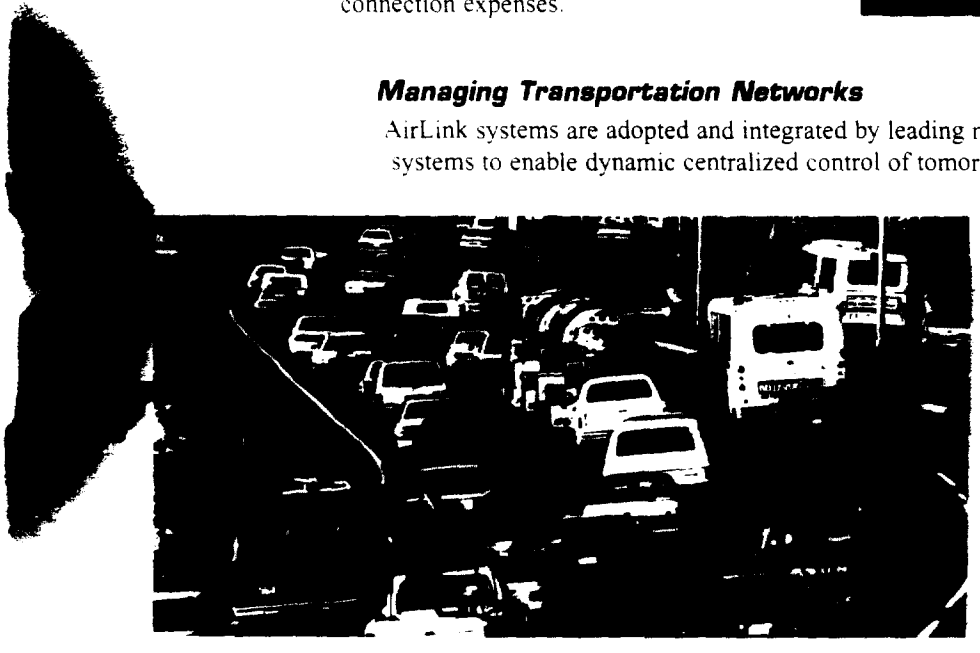
In Armenia, a strong demand exists to supply Internet connections to the business and academic communities, but the limited telecommunications infrastructure restricts wireline access to e-mail service that the Internet provides. To deliver the service, a network operator built an earth station as a gateway to the Internet. Individual connections to the Internet's e-mail backbone are provided using AirLink systems fanning out from the earth station.

Helping Schools Go Online

U.S. school administrators are being directed to bring their networks on-line with the Internet. But economic policies make it inconvenient for each school to establish a separate Internet connection resulting in multiple repetitive charges. In order to reduce this problem, AirLink systems are increasingly used to network schools together to share Internet gateways. This one-time capital outlay is considered more acceptable to school officials than duplicated connection expenses.

Managing Transportation Networks

AirLink systems are adopted and integrated by leading manufacturers of traffic control systems to enable dynamic centralized control of tomorrow's highways.



Synchronized signals:
Federal programs are underway to coordinate traffic signal lights along heavily traveled corridors to reduce idle time. AirLink systems are deployed for permanent or temporary connection to traffic flow measurement devices. Wireless communication is the preferred method to connect devices as it is rapidly deployable and is not vulnerable to interruptions from frequent construction projects.

Intelligent highways:
New highway systems use rush hour cameras and pressure sensitive loops in-road to detect traffic flow, metering lights to control traffic, and overhead electronic displays for real-time traffic information. AirLink systems allow these widely dispersed elements to communicate without digging up roadbeds to lay new communication lines.

What do thousands of installations in countries around the world have in common?

AirLink™ Wireless Communications for Voice and Data

Cylink Corporation is a leader in wireless communications and the world's largest provider of enterprise-wide network information security products. Headquartered in Sunnyvale, California, Cylink serves Fortune 500 companies, multinational corporations and many government agencies.

Other Cylink locations throughout the USA include:
Washington DC & New York metro areas, Atlanta, Dallas, Chicago, Kansas City, and Colorado Springs.

International Sales Offices:
Cylink U. K. Tel: +44-1256-841919 Fax: +44-1256-24156
Cylink Singapore Tel: 65-297-6196 Fax: 65-297-6195
Cylink China Tel: 86-10-6467-1905 Fax: 86-10-6467-1906
Cylink Russia Tel: 7-095-240-3161 Fax: 7-095-240-2516
Cylink India Tel: +91-11-617-6913 Fax: +91-11-617-6913
Cylink Pakistan Tel: 92-21-584-0743 Fax:92-21-584-0727

fax on demand
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CYLINK®

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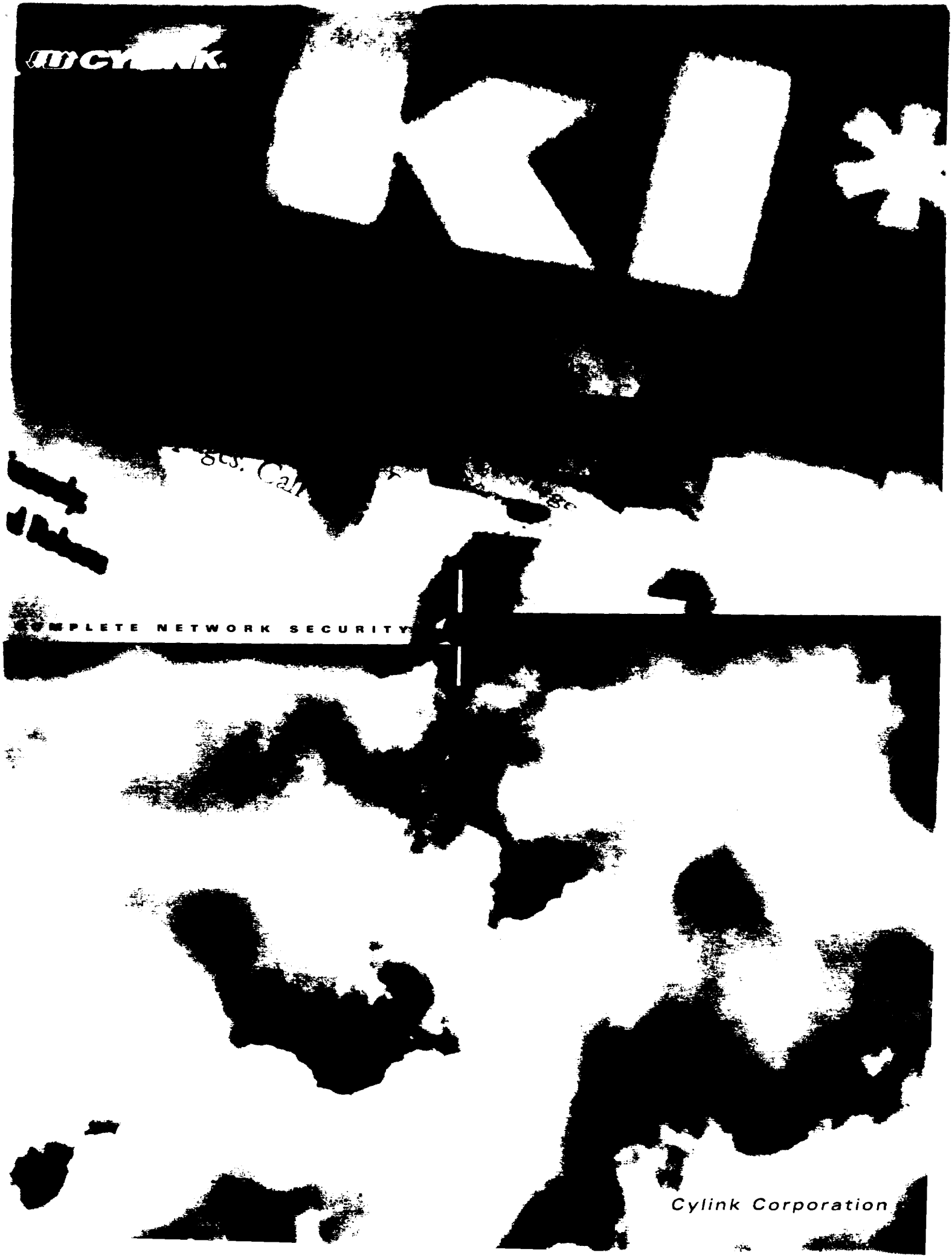
Tel: 408-735-5800
Fax: 408-720-8294

Cylink offers sales and service through a worldwide network of Distributors and VARS.

For information regarding the address or telephone number in your area please call:
800-533-3958 (USA only) or
408-735-5800 (International)
E-mail: **info@cylink.com**
Cylink home page: **http://www.cylink.com**


CYLINK
PLETE NETWORK SECURITY
Cylink Corporation

Inter-Ne

Started in 1984, Cylink Corporation is the world's leading provider of commercial enterprise-wide information security solutions, and the pioneer of industry-standard public key management technology. In 1990, the company introduced its line of extremely reliable, long-range, digital, spread spectrum microwave radio systems available in a wide variety of data rates. These wireless communications products are ideal for locations where wired connections are impractical. · The company is headquartered in Sunnyvale, California, U.S.A. with sales and service offices in eight countries around the world. Cylink's customers include Fortune 500 companies, multi-national financial institutions, agribusiness, construction, petro-chemical, and numerous U.S. and international government agencies.

Peace-of-mind protection for your most important investment

ORMATION SECURITY

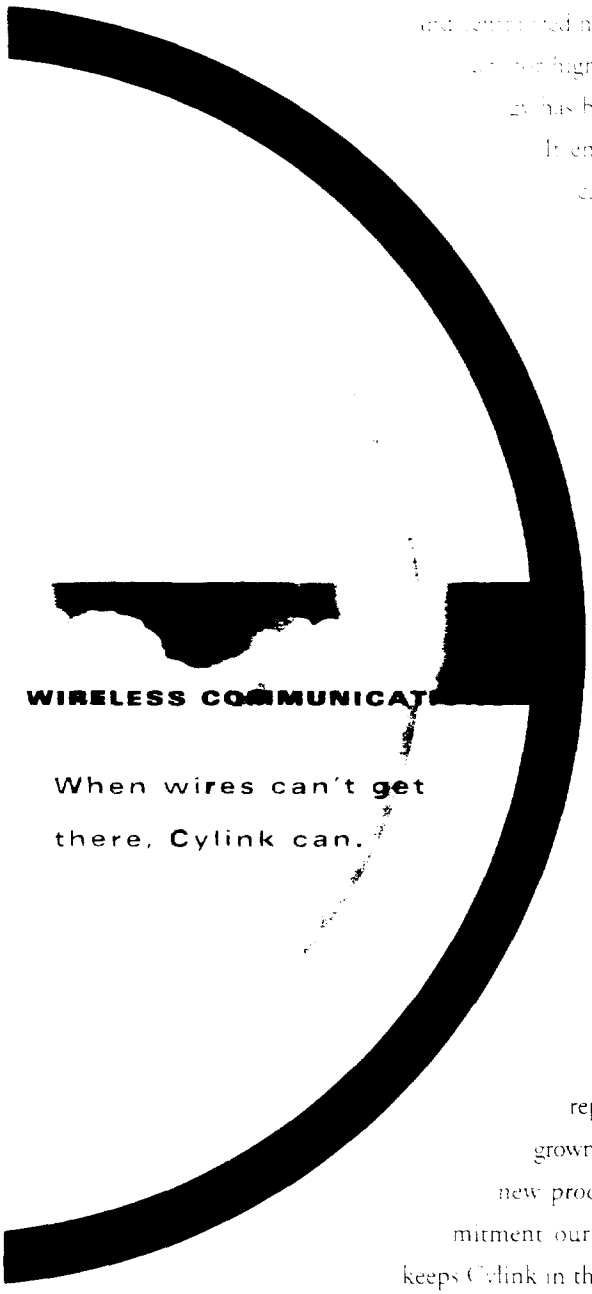
A LETTER FROM THE FOUNDERS

Maintaining our solid leadership position isn't only a reflection of marketshare. In our minds, it's really about the strength of our relationship with Cylink customers. It's about our ability to respond to our customers' needs by providing the highest quality, cutting-edge information security and wireless communications solutions in a global market exploding with commerce and innovation. • When we founded Cylink in the early 1980s, it began as a mission to provide products that filled a critical void in the data security market. Our customers wanted to hop aboard the electronic information and networking bandwagon, but to do so, they had to feel completely secure transmitting their most valuable commodity — information.

A Secure Commitment. It became our commitment to pioneer this path through the development of technology and tools that not only were innovative, reliable, easy-to-use and flexible, but also provided a lasting value and were uncompromisingly secure. It was a great challenge, but we accomplished our objective. In 1984, Cylink, in collaboration with

With three trillion dollars transferred electronically each day all over the world, major banks depend on Cylink to ensure complete security.

t w o r k i n g

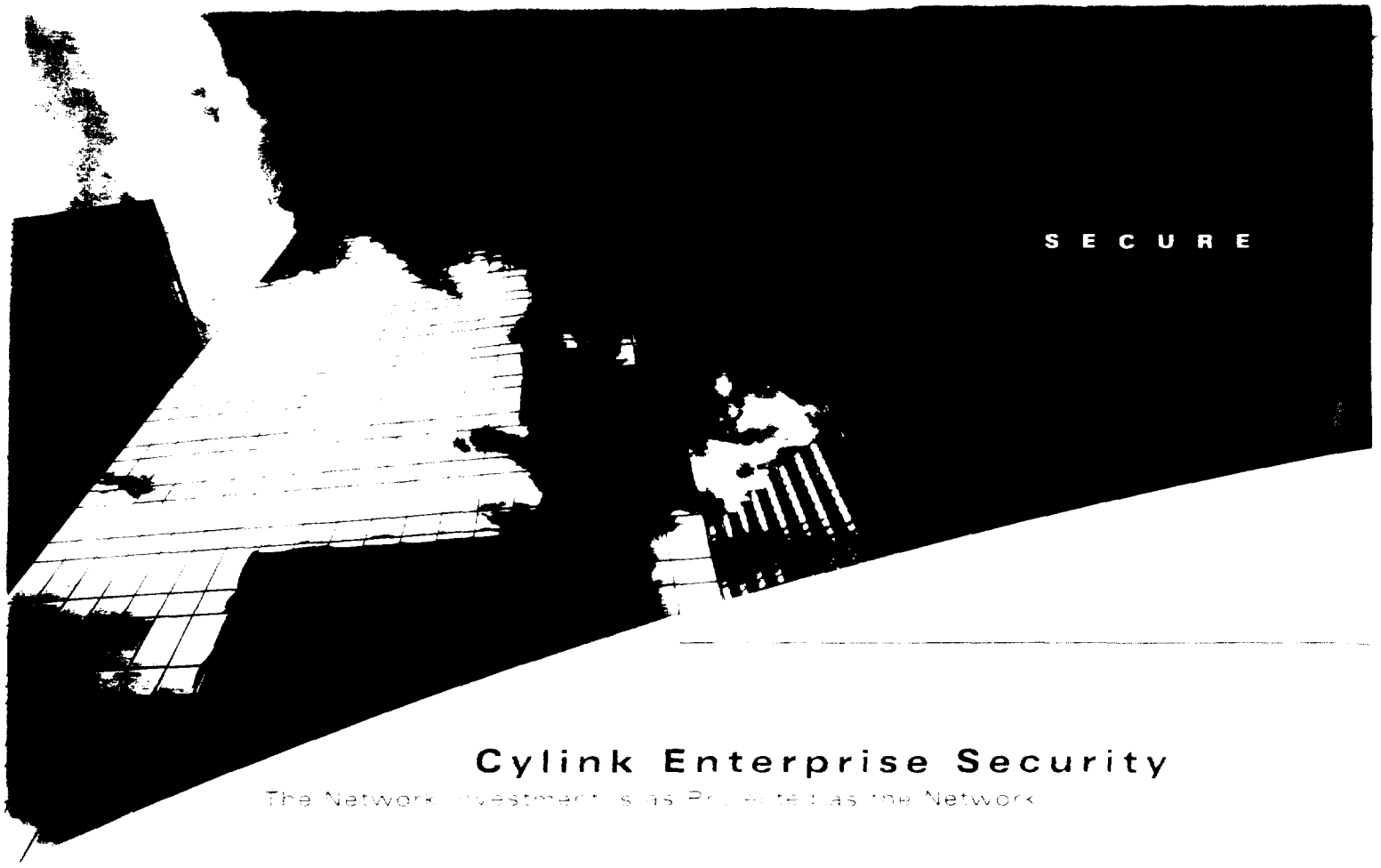


[illegible] pioneered the commercial implementation of [illegible] management. We also introduced the industry's first integration of [illegible] and centralized network management for enterprise-wide information security [illegible] high-speed wide-area networks (WAN) security. This enabling technology has become the universal standard for modern networks that [illegible]. It ensures that an organization's business transactions and communications are always complete & secure. • But we didn't stop there. In 1987, we pioneered the first public key management coprocessor which remains the application-specific integrated circuit (ASIC) industry-standard for public key management acceleration. In 1994, we brought to market the first triple-DES (Data Encryption Standard) encryption algorithm ASIC and the first high-speed triple DES encryptor. • The banner year of 1995 resulted in several new products that changed the face of secure enterprise-wide networks forever. We introduced an advanced security library for software developers, a certificate-based access control system, a certificate-based LAN security system, and the world's first asynchronous transfer mode (ATM) cell encryptor.

The Wireless Revolution. While enterprise security solutions are our landmark business, it isn't our only business. Recognizing the developing need for a wireless data and voice communications infrastructure — where phone lines can't go — we introduced our AirLink™ family of wireless, long-range, digital microwave radio products in 1990. By leveraging our existing spread spectrum technology expertise and adding complementary narrowband products, our reputation as a single source, wireless communications provider has grown dramatically. • We continue to listen to our customers and develop new products with the same promise of high quality, reliability and commitment our name has come to represent. It is precisely this distinction that keeps Cylink in the forefront of the global marketplace, and our customers free to do business where and how they want — without limitations and with complete confidence."

— Cylink Founders Lew Morris and Jim Omura

In remote areas where wires cannot go, AirLinks make communications possible by providing the last mile solution with local telephone companies.



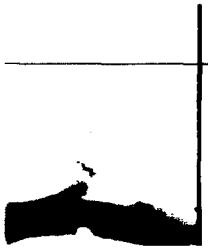
Cylink Enterprise Security

The Network Investment Is as Private as the Network

Prior to the 1990s, a business or organization's information was stored in centralized mainframes running along private networks. Security violations were rare. • However, this sense of security unraveled in the 1990s when enterprises began to take advantage of distributed client server architectures, such as the Internet — a fundamental shift that has facilitated global business transactions. But with these open, distributed, enterprise-wide networks came unscrupulous hackers responsible for breaches amounting to losses in the millions. • This simply was not acceptable.

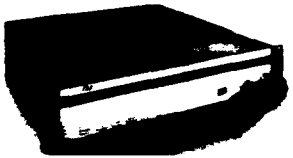
Security Has No Limits.

Users have always demanded an effective security solution. This solution must encompass the five critical functions of enterprise security: authentication, access, privacy, integrity and non-repudiation. The solution must integrate easily into existing networks, making migration easy and cost-effective. The approach must be seamless and fully interoperable with applications, nodes and sub-networks under a common administration, and able to run across LANs, WANs and the Internet. It must offer software development tools so organizations can create custom applications to meet their unique requirements. And of course, the best technology must provide complete security beyond conventional network firewalls and password entry. With all these requirements, how far would a business have to go to protect its most valuable asset — information? • Not far. The secure solution has always been Cylink's family of enterprise-wide information security products.



SecureX25

SecureX25 encrypts from 32 to 512 simultaneous virtual circuits of data rates up to 64 kbps



SecureWAN

The SecureWAN's high-speed HSSI link encryptor for digital networks features the power of DES or Triple-DES encryption

SecureAccess

"We've got too much to lose if there's a security breach. Our transactions and applications travel worldwide over multiple dedicated circuits. Cylink's encryption with both DES and proprietary regional capabilities gave us the peace-of-mind we've got to have. Security problems are now history."

- Director of MIS,
large worldwide long distance communications company

"Pharmaceuticals are a competitive business. We needed easy-to-configure products and encryption to secure data links on a worldwide network that passes scientific formulas to various R&D labs. Cylink was the only company able to give us the flexibility with high and low speed encryption capabilities."

- Vice President, MIS,
multinational pharmaceutical corporation

"We have a lot of remote users [illegible] trial attorneys [illegible] server access 24 hours a day. [illegible] an unauthorized breach [illegible] dial-up connections. [illegible] worry about the [illegible] of security."

- MIS Director, U.S. Department of Justice

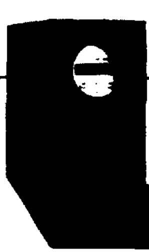
Whether communicating through the Internet or via a corporate network, Cylink security products guard your information at both ends of the network.

Leadership by Design.

At the core of Cylink's product design is the Secure Enterprise Architecture — S.E.A.Stack™ — which forms the foundation of Cylink's product families: SecureAccess™ for remote access; SecureLAN™ for enterprise local area network security; and SecureWAN™ for wide area network security. • Using its own integrated circuit technology, Cylink provides state-of-the-art performance and superior reliability. As a result, Cylink's security products don't affect network throughput like many of the traditional security alternatives available today. • Cylink also provides custom algorithms, as well as proprietary ICs, including very high-speed DES and Triple-DES encryption engines, and a specialized co-processor for public key acceleration.

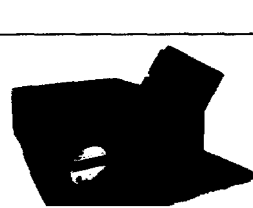
Secure Enterprise Architecture.

Cylink's S.E.A.Stack incorporates the elements required for an all-encompassing enterprise-wide security system: encryption, key management, public-key digital signatures, certificates and certificate-issuing authorities, directory services, comprehensive network security management and security protocols. • This powerful and innovative architecture provides privacy, data integrity, authentication, access control and non-repudiation throughout the network with centralized configuration and control. Cylink's key management and authentication, which is completely automated through public key cryptography techniques, makes scalability previously considered impossible, easy to accomplish. • Cylink's family of enterprise-wide information security products makes the network investment as protected as the network.



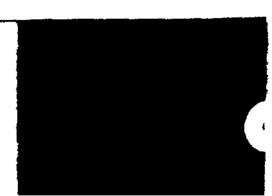
SecureLAN

All SecureLAN products are based on hacker-proof certificate and encryption technology [illegible] the highest level of security available today



SecureDomain

SecureDomain and SecureNode card allow nodes, domains, subnets and networks to communicate securely and seamlessly



"[illegible] AirLink was the only product that met our requirements."

- Director of Information,
U.S. sports car racing organization

"We contracted to help a Pacific Rim government telco deregulate to five regional companies [illegible] in only five years. With AirLinks there were no regulatory complications, and installation was fast — requiring no tower — only a three-inch mounting pipe. The cost was a fraction of laying wires."

- President, California-based distributor

"When corporate [illegible] better communications, we [illegible] afford to lay lines [illegible] scattered farms and zone offices. And lines would be a maintenance nightmare in the [illegible] terrain. We had to go wireless. We chose AirLinks because of performance and reliability. We chose Cylink because of the local service and support."

- Regional Manager,
Latin American fruit grower and processor

Cylink Wireless Communications

Where Wires Won't Go

Meeting the worldwide market demand for improved communications is one of the highest investment priorities for businesses today, whether it's to carry private voice transmissions across town or data communications over a public network. In developing countries, voice and data communications are not always reliable; yet to compete in the global market, updating existing systems to improve performance, handling increasing traffic requirements, or installing new systems where there are none, can be a matter of national survival.

Untethering Communications.

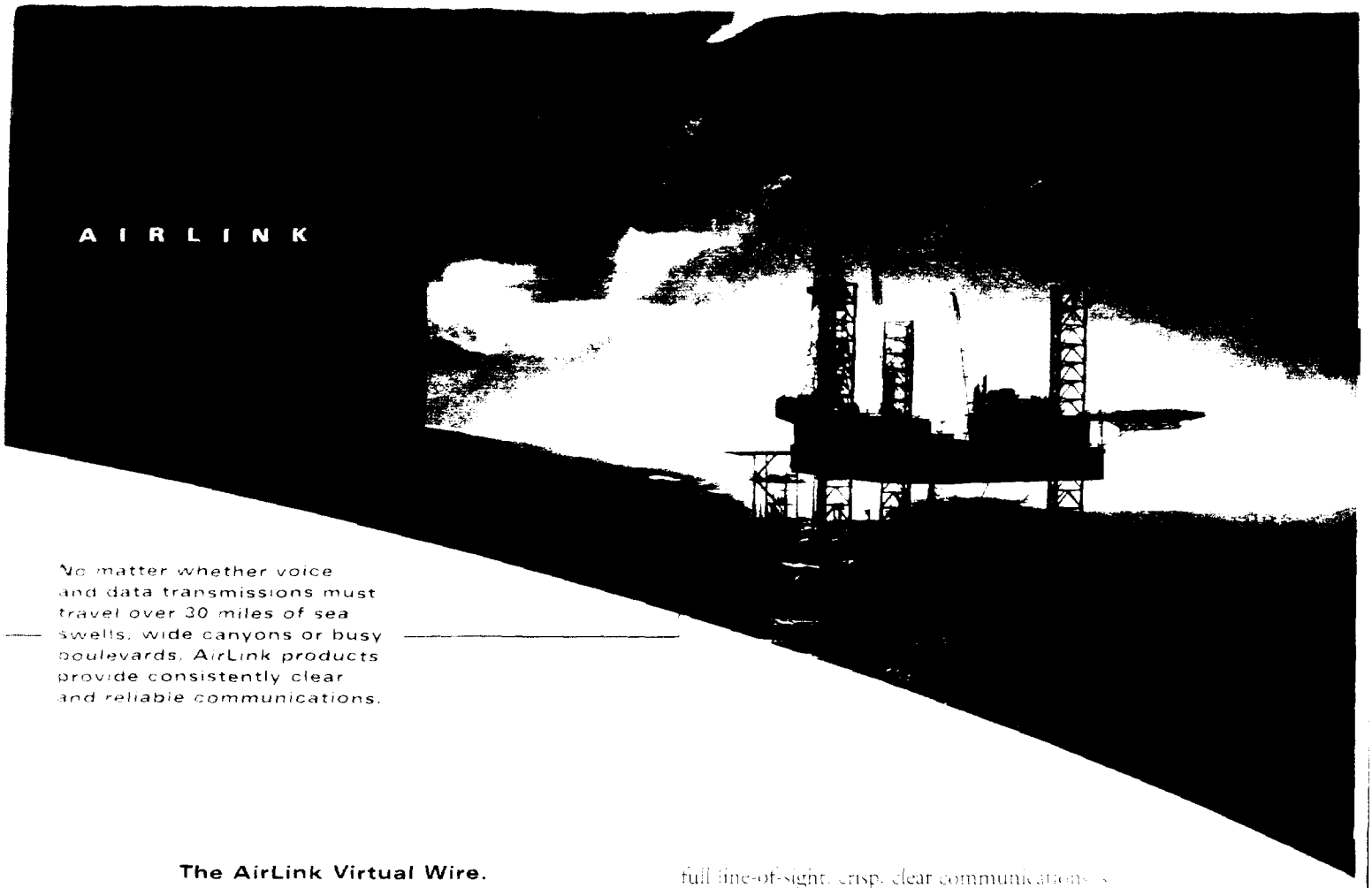
Today, there is a revolution as companies vie for access on leased and dial-up lines to accommodate both routine voice and the exploding trend of electronic data communications. To fill expanding service requirements and overload, many businesses and telephone companies are now choosing wireless communications as a high-quality, reliable and cost-effective alternative to wired infrastructures. • Cylink offers this alternative with its "spread spectrum" microwave technology which increases reliability and minimizes interference. Spread spectrum differs from other commercial microwave technology because it spreads, rather than concentrates the signal. And since the licensing requirements for wide bandwidth technology, such as spread spectrum, have been removed by the FCC and many other international licensing agencies, Cylink's approach makes wireless communications easier and more cost-effective than ever before.

AirLink Product Family

AIRLINK

AirLink wireless modems offer powerful point-to-point or point-to-multipoint systems — often

Cylink offers a wide variety of antennas, customized to work with the AirLink wireless modems.

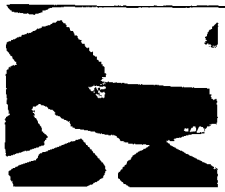


No matter whether voice and data transmissions must travel over 30 miles of sea swells, wide canyons or busy boulevards, AirLink products provide consistently clear and reliable communications.

The AirLink Virtual Wire.

Cylink's AirLink family of digital microwave radio modems is based on a technology that offers all the advantages of reliable service without the monthly bill or limitations of wires. • The AirLink family of wireless modems — point-to-point, point-to-multi-point, AirLink T1/E1, and the AirLink Bridge — provide a cost-effective alternative to wires with their full-featured, error-free digital pathways and easy installation. Through a powerful over-the-air protocol, many links can be distributed from a hub or base station, making AirLink particularly suitable for local distribution from wired, fiber and satellite networks. And for those applications that have a full line-of-sight, crisp, clear communications is accomplished up to 30 miles/50 km, and further with the addition of repeaters. • AirLink products are interoperable with all popular communications technology — bridges, routers, multiplexers and phone systems — and completely transparent to the end-user. Its full-duplex operation, combined with a unique interface and other design enhancements, allows customers to plug into AirLink as if they were using a leased wired line provided by the local telephone company.

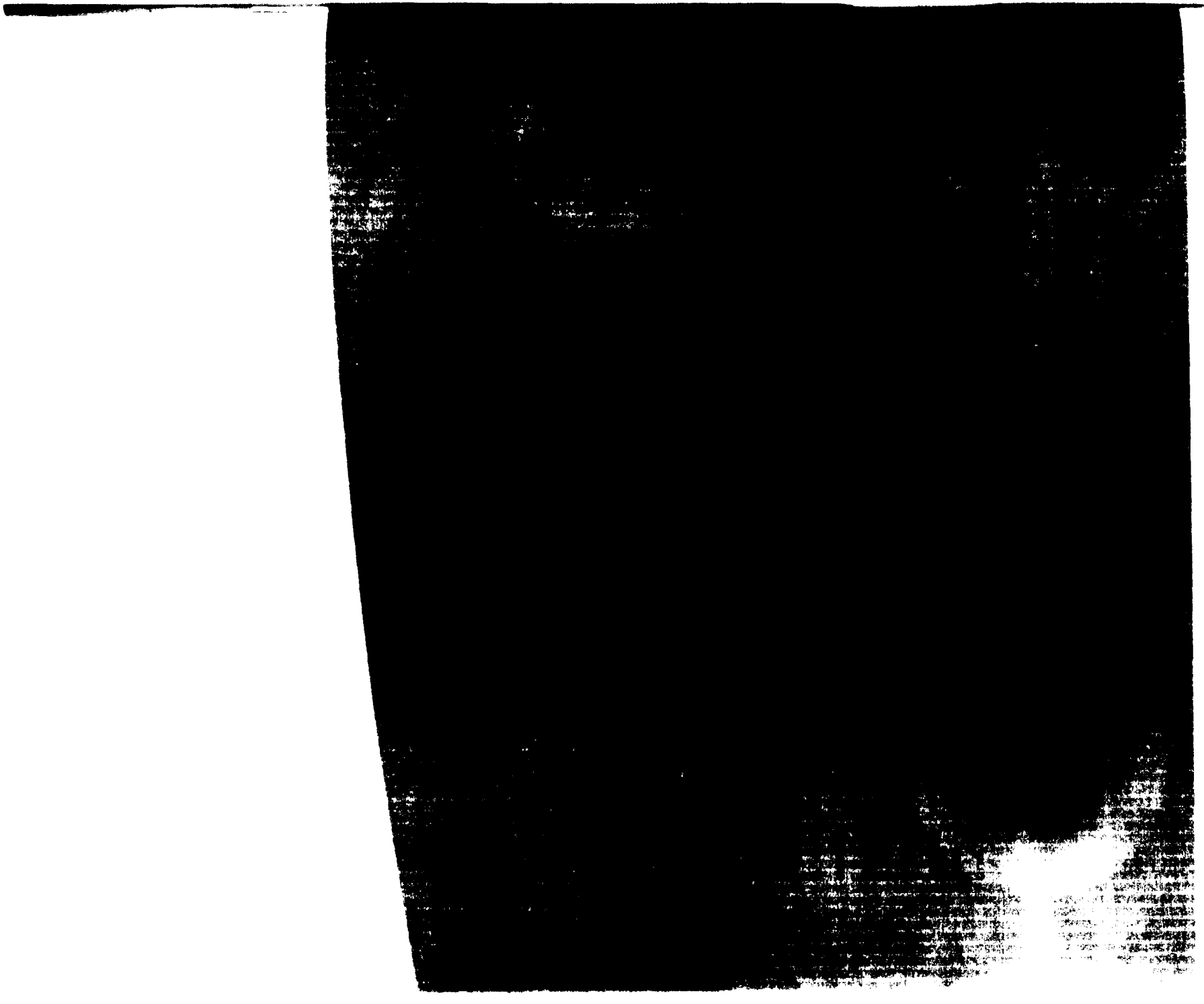
Cylink Chips

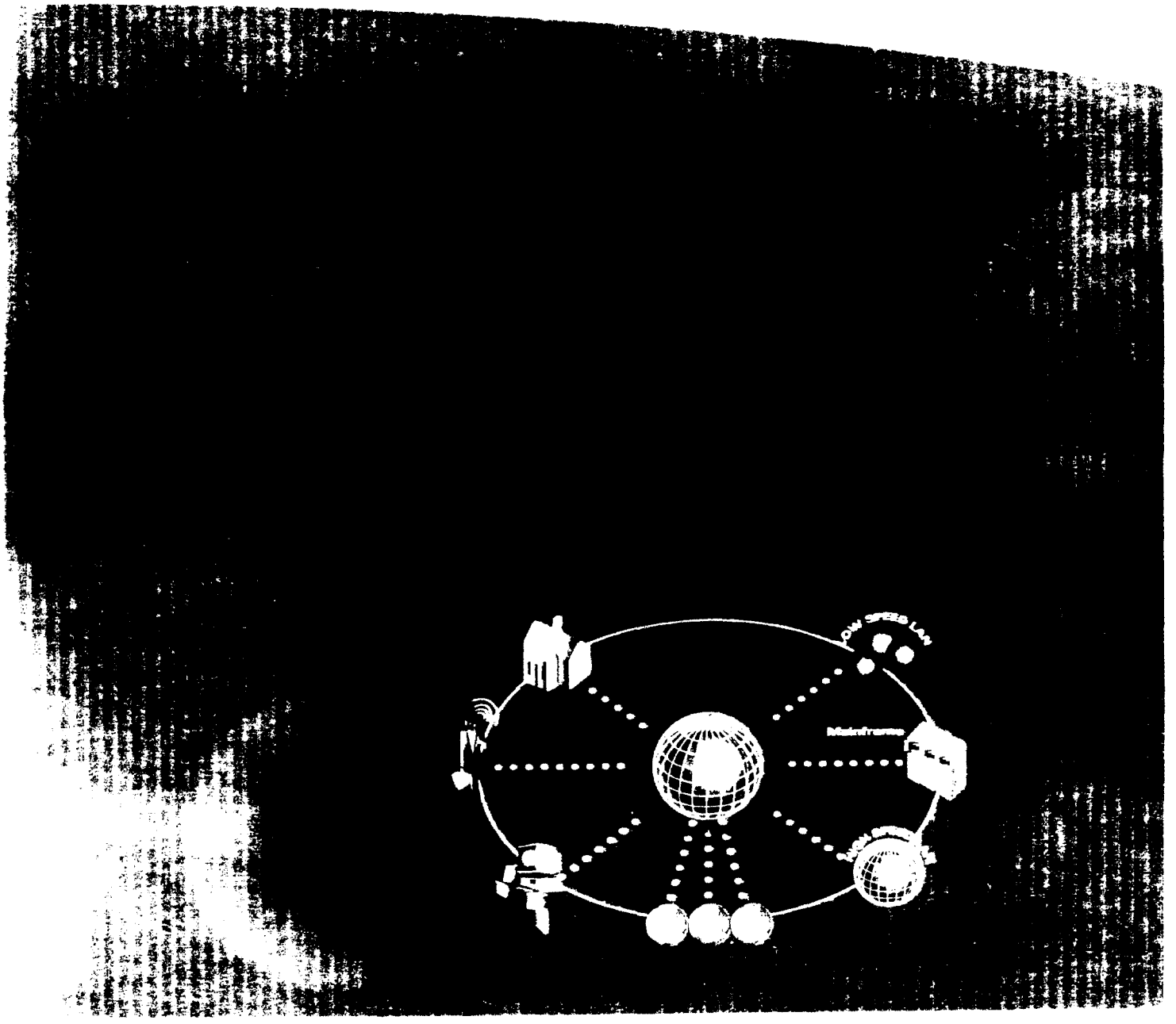


Cylink designs custom ASICs for information security and wireless communications products.

AirLink T1/E1 Radios

Rugged outdoor design T1/E1 radios are remotely configurable and allow connections and performance to be monitored from the desktop.




LOW SPEED LAN

SecureWAN for the Whole Enterprise.

[illegible] SecureWAN [illegible] packet-based options.

SecureWAN products offer wide-reaching security coverage for virtually all public and private packet-based networks, including frame relay with SecureFrame™ and X.25 with SecureX25™. [illegible] SecureWAN products [illegible] and dedicated networks [illegible] ISDN, PSTN, Switch56 and 64 [illegible]

ENTERPRISE PRODUCT FAMILIES

As with [illegible] SecureWAN products are [illegible] standards and [illegible] are completely transparent [illegible]

SecureFrame for Total On-Line Security.

The SecureWAN product for frame relay networks, SecureFrame builds secure, industry standard-based connections between frame relay nodes in private or public networks. SecureFrame ensures [illegible] access, source and destination authentication and data encryption to protect [illegible] information as it moves across the frame relay network.

As with [illegible] SecureLAN [illegible] products, network administrators [illegible] SecureFrame product using the SNMP [illegible] SecureManager management [illegible] relay network security [illegible]

The ATM Encryption Pioneer.

[illegible]

SecureManager for Hacker-proof Protection.

[illegible]

Partners in Success.

[illegible]